

**BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN**

Application of the Milwaukee Water Works
for Authority to Increase Water Rates

Docket 3720-WR-108

**SURREBUTTAL TESTIMONY OF CHRISTINE CRAMER
ON BEHALF OF MILWAUKEE WATER WORKS**

1 **Q. Please state your name and business address.**

2 A. My name is Christine Cramer and my business address is 231 East Buffalo Street, Suite
3 306, Milwaukee, Wisconsin, 53202.

4 **Q. Have you previously submitted testimony in this proceeding?**

5 A. Yes, I submitted direct and rebuttal testimony.

6 **Q. What is the purpose of your surrebuttal testimony?**

7 A. The purpose of my testimony is demonstrate that the retail customer demand factors
8 calculated in the Customer Demand Study are comparable to the wholesale demand
9 factors, to document the sources for the customer demand factors used in the 2009-2011
10 rate case and explain why it is critical to a fair allocation of costs that those factors be
11 revised.

12 **Q. In her rebuttal testimony, Ms. Schmidt stated that she disagrees that the results of**
13 **the Customer Demand Study provide a reasonable basis for determining current**
14 **customer demand factors and that further study is warranted before revising**
15 **customer demand factors. Do you agree with her conclusion?**

16 A. No, I do not.

17 **Q. Why do you disagree?**

1 A. First, I believe that the amount of data collected for the Customer Demand Study, Ex.-
2 MWW-Cramer-2, and the analysis of that data are sufficient to determine reasonable
3 customer class demand factors, as explained in my rebuttal testimony and Erik Granum's
4 rebuttal testimony, and further supported in this surrebuttal testimony. Second, the
5 alternatives that have been proposed by the wholesale intervenors are based on
6 insufficient or outdated data and are therefore unreasonable and would result in the
7 continuation of an inequitable cost allocation between customer classes.

8 **Q. Why are the proposed alternatives unreasonable?**

9 A. The wholesale intervenors propose that the demand factors for wholesale customers be
10 based not on the continuous hourly meter reading data for each customer's connection
11 points to MWW's system for all of 2013 and much of 2012, and instead be based on the
12 same method as the last rate case. They propose to use their own internal daily pumpage
13 records to determine maximum day factors and multiply their proposed maximum day
14 factors by a flat factor of 1.43 for all wholesale customers to arrive at maximum hour
15 factors. It is unreasonable to discard the actual metered hourly demand on MWW's
16 system, as presented in the Customer Demand Study, in favor of factors that we know do
17 not reflect the wholesale customers' actual demand patterns.

18 For the retail customer classes, the wholesale intervenors support using the same
19 ratios as were used in the 2009-2011 rate case. These factors are based on a 1977 study
20 prepared by Black & Veatch, entitled "Report on Water Use Characteristics and Demand
21 Factors by Customer Classes for Milwaukee, Wisconsin" (1977 Study). Excerpts of the
22 1977 Study are attached as Ex.-MWW-Cramer-11 and Ex.-MWW-Cramer-12. This
23 study had significant data limitations and flaws in the analysis. In addition, the ratios used

1 for MWW's retail classes are the higher unadjusted noncoincident ratios calculated in the
2 1977 Study, not the adjusted ratios that were recommended in the 1977 Study. The
3 continued use of these demand factors for the retail customer classes is unreasonable now
4 that MWW has better data.

5 **Q. What are the problems with the 1977 Study?**

6 A. The major limitations of the 1977 Study include the following:

- 7 • The age of the data makes it unreasonable to determine factors for retail classes
8 relative to wholesale customers.
- 9 • Technology was not available in 1977 to continuously record hourly or daily data
10 for the sample customers. Therefore, subgroups of customers within each sample
11 were metered daily for 4 or 5 days within a week at different times within the
12 sample period of June 15 to approximately September 15, 1977. Ex.-MWW-
13 Cramer-11, page 16, and Ex.-MWW-Cramer-12. For example, 25 customers
14 were sampled on June 15, June 16, June 17, June 20 and June 21. Another small
15 group of customers were sampled daily on June 23, June 24, June 25, June 27 and
16 June 28 and so forth. Each sample customer had hourly meter readings taken for
17 14 hours per day for 2 days within the sample period. There was not a single day
18 or hour within the sample period when more than a few customers in the sample
19 for any customer class were sampled at the same time.
- 20 • Meter readings for retail residential did not begin until late July 1977, and missed
21 the maximum day during 1977. Ex.-MWW-Cramer-11, page 21.
- 22 • The 1977 Study inappropriately determined the customer class demand ratios on
23 the basis of the average noncoincident demand of the specific customers in the

sample for each customer class rather than estimating the coincident peak demands of the class as a whole. Ex.-MWW-Cramer-11, page 6. The 1977 Study attempted to estimate the coincident maximum hour demand for each class by applying an unexplained adjustment to the noncoincident maximum hour demand. However, the maximum hour demand factors used for MWW's retail customer classes in the Commission Authorized Cost of Service Study and Rate Design for the 2009-2011 rate case are not even based on the recommended coincident factors but on the higher noncoincident factors. (Ex.-MWW-Cramer-17, PSC REF#: 146073, Schedule 9)

Q. Why is the 1977 Study's use of the noncoincident maximum demands of the individual customers in the customer class inappropriate?

A. The customer class demand factors are used to allocate costs between customer classes, not between individual customers. Therefore the appropriate demand factor should be based on a reasonable estimate of the demand patterns of the class as a whole. Different individual customers within a class peak at different times, therefore the peak demand ratio of the class as a whole is lower than the peak demand ratios of individual customers within the class. This phenomenon is illustrated in Table 23 of the Customer Demand Study (Ex.-MWW-Cramer-2, p. 70), for example. For the Residential Sample, hourly meter readings were taken for 185 residential customers continuously from July 14 through August 8, 2014. The maximum day to average day demand ratios of the 185 individual customers in the sample averaged 2.845. The maximum daily usage of the entire sample was 75,384 and the average daily usage of the entire sample was 53,738, yielding a coincident maximum day to average day ratio of 1.403 for the entire sample.

1 The difference between the maximum hour to average day ratios of the individual
2 customers, averaging 20.289, and the coincident maximum hour to average day ratio of
3 2.615 for the entire sample, is even more pronounced. A similar pattern was found for
4 every sample period and for every retail customer class. Clearly, the average demand
5 ratios of the individual customers are much higher than those of the entire sample (and
6 the class as a whole) and should not be used as the class demand factors.

7 **Q. Please explain the differences between the factors actually used for the MWW's**
8 **retail classes versus the recommendations of the 1977 Study.**

9 A. For maximum day factors, the Study recommended using the noncoincidental maximum
10 day extra-capacity factors of 1.20 for residential, 0.43 for industrial, 1.10 for commercial,
11 and 0.98 for public authority. The Study calculated noncoincidental maximum hour
12 extra-capacity ratios of 4.64 for residential, 1.11 for industrial, 4.52 for commercial, and
13 3.93 for public authority, but recommended using the adjusted coincidental maximum
14 hour extra-capacity ratios of 2.42 for residential, 1.11 for industrial, 2.97 for commercial
15 and 1.75 for public authority. (Ex.-MWW-Cramer-11, p. 29 and p. 6) The ratios actually
16 used for the 2009-2011 rate case were as follows: maximum day extra-capacity ratios of
17 1.50 for residential, 0.60 for industrial, 1.20 for commercial, and 1.05 for public
18 authority; maximum hour extra-capacity ratios of 4.64 for residential, 1.10 for industrial,
19 4.50 for commercial, and 3.93 for public authority. (Ex.-MWW-Cramer-17).

20 **Q. So the ratios currently used for MWW's retail customer classes are higher than**
21 **what was recommended in the 1977 Study?**

1 A. Yes, they are. The maximum day ratios are slightly higher than what was recommended.
2 The maximum hour ratios are set at the significantly higher noncoincidental ratios rather
3 than the recommended coincidental ratios.

4 **Q. Do you have any other comments on Ms. Schmidt's testimony?**

5 A. Yes. Ms. Schmidt does not provide any detail or support for her statement regarding
6 deficiencies in data collected and the analysis of that data.

7 At Rebuttal-PSC-Schmidt-2, Ms. Schmidt quotes the same paragraph from the
8 Final Decision in the 2009-2011 Rate Case (Docket 3720-WR-107) as was quoted by Mr.
9 Rothstein in his direct testimony, as follows "In its Final Decision in Milwaukee Water
10 Works' last rate case (docket 3720-WR-107), the Commission determined that there was
11 "insufficient information in the record to support a revision of customer class *maximum*
12 *hour* [emphasis added] demand ratios in this case. These ratios may be revised in a future
13 rate case if data is collected to support a revision." (PSC REF#: 144469)."

14 I believe Ms. Schmidt's (and Mr. Rothstein's) use of this quote from the Final
15 Decision in the 2009-2011 Rate Case is taken out of context of the proceedings of the
16 2009-2011 rate case and is incorrectly used to justify rejecting the data gathered in the
17 Customer Demand Study in favor of the ratios used in the last rate case.

18 **Q. Why do you believe that this quote was taken out of context and used incorrectly?**

19 A. Ms. Schmidt (and Mr. Rothstein) both use this quote as if data was proposed in the last
20 rate case to support revising the customer demand factors, but the revised demand factors
21 were rejected because the data proposed to support the revisions was insufficient. If one
22 reads further on into the Final Decision, however, the Commission's decision with
23 respect to customer demand factors is explained in more detail:

1 The customer demand ratios for max hour used in the 2007 MWW
2 rate case were virtually unchanged from those used in docket
3 3720-WR-101 in 1990. Commission staff proposed lower customer
4 class max hour demand ratios based on the max day demand ratios
5 used in MWW's 2007 COSS and a review of similar utilities. This
6 revision lowered demand ratios for all retail customer classes, but
7 the residential classes received the largest decrease. MillerCoors
8 countered that MWW is different than the sample of utilities
9 Commission staff used for comparison because MWW has a
10 greater number of wholesale customers and large industrial
11 customers. MillerCoors supported retaining the demand ratios used
12 in the 2007 COSS until sufficient data is gathered to directly
13 recalculate customer class peak demands. The Commission agrees
14 that MWW is unique compared to other water utilities in
15 Wisconsin. It is more reasonable to determine customer class
16 demand ratios for MWW from information specific to MWW than
17 from a comparison to other utilities. Accordingly, the Commission
18 finds it reasonable to retain the previous max hour customer class
19 demand ratios until MWW is able to provide better data on
20 maximum hour demand. (PSC REF #: 144469, p. 13)
21

22 If the entire proceedings of the 2009-2011 Rate Case are reviewed, several facts are clear.

23 First, it was Commission staff, specifically Andrew Behm, who proposed revised
24 customer class demand factors. Second, the factors proposed for the retail customer
25 classes were lower than the factors that were used in previous rate cases. Finally, it is
26 clear that the Commission rejected Mr. Behm's proposal to revise the customer demand
27 factors not because insufficient data was provided, but because Mr. Behm's proposed
28 revisions were not based on data at all. The proposed revisions were based on average
29 factors used by other Wisconsin utilities (which also were based on rules of thumb rather
30 than data specific to those utilities).

31 **Q. Why and how did Mr. Behm propose to lower customer class demand ratios for**
32 **retail customer classes in the 2009-2011 rate case?**

1 A. In his direct testimony in Docket 3720-WR-107, D12.17, Ex.-MWW-Cramer-13, Mr.

2 Behm stated the following regarding his proposed customer demand factors:

3 I believe the retail max hour extra-capacity ratios used in the
4 previous rate case do not accurately describe MWW's customer
5 classes in this case. The customer base has diminished to the point
6 that customers are not likely to require the large maximum flows
7 they did in the late 1980s or early 1990s. This is essentially the
8 same reasoning applied earlier in calculating the system demand
9 ratios. MWW could not provide maximum hourly consumption
10 data by class, so I reviewed the retail max hour extra-capacity
11 ratios used in the most recent rate cases of several other large
12 utilities providing wholesale service in Wisconsin. I reviewed
13 recent rate cases for Racine, Oak Creek, Kenosha, Menasha,
14 Appleton, Sheboygan, and Beloit. Based on the values used in
15 these cases, I chose reasonable retail max hour ratios.
16

17 In his rebuttal testimony in Docket 3720-WR-107, R12.9, Ex.-MWW-Cramer-14, Mr.

18 Behm further supported his proposed revision of the max hour demand factors as follows:

19 I reduced the max hour extra-capacity demand ratios for all retail
20 classes compared to the 2007 cost of service study. Mr. Gorman is
21 correct that no data is available from which to directly calculate
22 max hour extra-capacity demand ratios. However, my revised extra
23 capacity ratios are not "unrealistic".
24

25 The urban retail max hour extra-capacity demand ratios used in the
26 2007 cost of service study are 4.64, 4.50, 1.11, and 3.93 for
27 residential, commercial, industrial, and public authority,
28 respectively. The cost of service study performed for MWW in
29 1990 in docket 3720-WR-101, 17 years earlier, used virtually
30 identical urban retail max hour extra capacity ratios of 4.64, 4.52,
31 1.11, and 3.93 for residential, commercial, industrial, and public
32 authority. Given the dramatic changes MWW has experienced in
33 its customer base over the last two decades, it would have been
34 unrealistic to continue using extra-capacity ratios calculated in
35 1990. In the absence of actual demand data, I reviewed recent cost
36 of service studies for other large wholesaling utilities as described
37 on page D12.17 of my direct testimony. In every case the max hour
38 extra-capacity ratios used for MWW were significantly higher than
39 those used for other utilities, not only taken by themselves but also
40 in comparison with the max day extra-capacity ratios.
41

1 Again, Mr. Behm further stated in his surrebuttal testimony in Docket 3720-WR-107,
2 S12.30, Ex.-MWW-Cramer-15 (emphasis added):

3 **If the demand data MWW proposes to collect justify the**
4 **demand factors used in the 2007 cost of service study, it would**
5 **be more than a coincidence; it would be a surprising**
6 **aberration.**
7

8 **Q. Did the Commission reject Mr. Behm’s proposed reduction in max hour demand**
9 **factors for the retail customer classes because the changes were based on actual data**
10 **from MWW’s customers that was deemed to be insufficient in scope or method of**
11 **analysis?**

12 A. No, Mr. Behm’s proposed reductions in max hour demand factors for the retail customer
13 classes were rejected because they were not based on any data from MWW’s customers.
14 Instead they were based on an analysis of the factors used for other Wisconsin utilities.
15 The Commission determined that “*MWW is unique compared to other water utilities in*
16 *Wisconsin. It is more reasonable to determine customer class demand ratios for MWW*
17 *from information specific to MWW than from a comparison to other utilities.*” (PSC
18 REF#:144469, at 13).

19 **Q. How did Mr. Behm propose to revise the wholesale customer class max hour**
20 **demand factors?**

21 A. In his direct testimony in Docket 3720-WR-107, D12.17, Ex.-MWW-Cramer-13, Mr.
22 Behm explained his proposed revisions to the wholesale customer max hour factors as
23 follows:

24 **No historical data is available for wholesale max hour extra-**
25 **capacity ratios. Based on the review of the rate cases**
26 **mentioned above, I estimated the ratio of maximum hour**
27 **consumption to average hour consumption for each wholesale**

1 **customer to be 1.43 times its ratio of maximum day**
2 **consumption to average day consumption.** I rounded max hour
3 ratios up to the nearest hundredth. For instance, the extra-capacity
4 max day ratio for Brown Deer is 0.89 meaning Brown Deer's
5 maximum day consumption is 189 percent of its average day
6 consumption. 189 times 1.43 equals 271, so maximum hour
7 consumption is 271 percent of average hour consumption. This
8 yields an extra-capacity max hour ratio of 1.71 for Brown Deer.
9 (emphasis added)

10
11 **Q. Did the Commission approve the revisions to the wholesale customer class max hour**
12 **demand factors as proposed by Mr. Behm?**

13 A. Yes.

14 **Q. Is historical data now available to replace the estimates Mr. Behm used in the 2009-**
15 **2011 rate case?**

16 A. Yes, the Customer Demand Study collected and analyzed approximately 18 months of
17 hourly demand readings for all of the wholesale customers except Shorewood and
18 Milwaukee County Institutions in support of the proposed max hour demand factors for
19 the wholesale customers.

20 **Q. Did the Commission provide any additional criteria or guidance as to what**
21 **information to collect or how to analyze that information in order to support**
22 **revisions to the retail class demand factors?**

23 A. The Commission did not provide any additional criteria or guidance. In his direct
24 testimony in Docket 3720-WR-107, D12.17, Ex.-MWW-Cramer-13, Mr. Behm stated "*It*
25 *is my understanding that MWW will pursue metering improvements for wholesale and*
26 *large retail customers that will provide actual maximum day and hour usage for future*
27 *rate cases.*"

1 **Q. Did MWW collect information specific to MWW customers since the 2009-2011 rate**
2 **case?**

3 A. Yes, MWW collected and analyzed well over a million points of data from wholesale
4 customers and all retail customer classes (including both large and small retail customers)
5 during the course of 2012 and 2013. The volume of raw data was too large to include in
6 the Customer Demand Study itself, either in electronic or hard copy format, however it
7 was provided to the wholesale intervenors in response to their first request for production
8 of documents (PSC REF #: 204276, PSC REF #: 204278, PSC REF #: 204277, PSC REF
9 #: 204292, PSC REF #: 204293, PSC REF #: 204294, PSC REF #: 204295, PSC REF #:
10 204296, PSC REF #: 204297, PSC REF #: 204298, and PSC REF #: 204299).

11 **Q. Do you have any additional testimony in support of the data and method of analysis**
12 **used in the Customer Demand Study?**

13 A. Yes. One of the issues raised by wholesale intervenors is the comparability of the factors
14 determined for the wholesale customers versus the retail customers due to the more
15 limited sample period for the retail customers. In order to demonstrate the mathematical
16 soundness of the method used to compute retail class demand factors, I have prepared an
17 exhibit showing what the demand factors would be for the wholesale customers using the
18 same method as was used for the retail class demand factors (Ex.-MWW-Cramer-16). As
19 shown, if the ratio of max day to average day within the month of July for each wholesale
20 customer is multiplied by the average seasonal peaking factors for 2012 and 2013, the
21 calculated max day ratio is very close to the actual proposed ratios calculated based on
22 the full data set. The proposed demand factors for the retail customers as calculated in the
23 Customer Demand Study do take the high peak demands of 2012 into account in a

1 manner that is in fact comparable to the manner in which the wholesale demand factors
2 were calculated.

3 **Q. Does this conclude your testimony?**

4 A. Yes, it does.